Course Emphasis: This course will emphasize the biochemical processes that occur in living organisms. We will examine the properties of biological macromolecules and relate their structure to their observable properties and functions. A major portion of this course will explore how living organisms acquire energy and transform energy into readily usable forms via metabolism. The course will utilize an integrated approach and relate chemical events to molecular physiology and medically relevant topics.

Course Goals:

1) To establish a true biochemistry learning community. This means we are all important players in the learning process. We share the responsibility to:
   a) come to class prepared
   b) actively participate by asking questions and discussing topics
   c) commit to learning as much as possible both as individuals and as a group

2) To establish structural and multidimensional literacy in biochemistry.
   Nominal literacy -- Many people are here!! They understand that something is biochemical in nature but are naive in their understanding and have many misconceptions.
   Functional literacy -- Many people are here!! They use biochemical vocabulary, define terms, but most things are memorized.
   Structural literacy -- We want to be here!! Students understand biochemical concepts and procedures for studying biochemistry. They can explain these concepts in their own words.
   Multidimensional literacy -- We want to be here!! Students understand the relationship between biochemistry and other disciplines and the relationship between biochemistry and society.

3) To help you learn how to learn biochemistry.
Assessment of your learning:

To determine if you are meeting the goals of this course and learning biochemistry, I will use a few different assessment methods. As much as is possible we will discuss the ideas we are covering so you can verbally convey your understanding (or misunderstanding). This will allow me to provide immediate feedback to you. Such forms of assessment will not count towards your grade for the course.

Written assessment will be used to formally determine how well you are understanding the material we are discussing. This assessment will take two forms: written quizzes and written exams. I will use a combination of matching, multiple choice, true and false, short answer, essay, and problem solving questions in these quizzes and exams. The schedule for the exams is found within this syllabus. The quizzes may be announced or unannounced. Homework problems will also be used to monitor your progress, although they will not be used to determine your grade.

Attendance:

This course is designed to be interactive. Students will be expected to collaborate both inside and outside the classroom, therefore attendance is very important. There will be a number of quizzes this semester and (on occasion) you might be asked to present small group discussions to the entire class. There are no make-ups for quizzes and presentations. Therefore, if you are absent on quiz or presentation days, you will lose points. I will throw out the lowest two quiz grades. That provides you with a bit of breathing room if you have to miss a class. There is no extra credit work in this class.

Make-up exams: An unauthorized absence from an exam will result in a grade of zero for the exam unless you have a signed excuse from an MD, law enforcement officer, or next of kin. There are a few (not many) valid reasons to miss an exam. If there is a valid reason for you to miss an exam, it is YOUR responsibility to notify me BEFORE the exam and complete the work prior to the exam if at all possible. Make-up exams are always harder than the original exam!

Exams and points:

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<tr>
<th></th>
<th>4 X 100 pts.</th>
<th>400 pts.</th>
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<tbody>
<tr>
<td>Discussion exams</td>
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<tr>
<td>Discussion quizzes (5-10 pts. each)</td>
<td>≤ 200 pts.</td>
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<td>Final exam</td>
<td>150 pts.</td>
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<td>Total</td>
<td>≤ 750 pts.</td>
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Grading:

90-100%  A
80-89%    B
65-79%    C  ***Final grades are based on total lecture points.
50-64%    D  I reserve the right to utilize a grading curve to
Below 50%  F  determine your final grade.
I will not curve downward.

Text and readings:


Required readings are assigned in the Biochemistry Notes and are to be completed with all questions answered prior to discussion of the topic in class. These readings will be the basis for classroom discussions and discussion quizzes.

**Tentative topics to be covered in Biochemistry**
**Biol/Chem 361**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>7</td>
<td>7  Sept.  Introduction to the course</td>
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<tr>
<td>9</td>
<td>Carbohydrates</td>
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<tr>
<td>12</td>
<td>Carbohydrates</td>
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<tr>
<td>14</td>
<td>Lipids and Membranes</td>
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<td>16</td>
<td>Lipids and Membranes</td>
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<td>19</td>
<td>Nucleic Acids</td>
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<td>21</td>
<td>Nucleic Acids and Proteins</td>
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<td>23</td>
<td>Project</td>
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<td>26</td>
<td>Proteins</td>
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<td>28</td>
<td>Proteins</td>
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<tr>
<td>30</td>
<td><strong>Examination #1</strong></td>
</tr>
<tr>
<td>3</td>
<td>Oct.  Myoglobin and Hemoglobin</td>
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<tr>
<td>5</td>
<td>Hemoglobin</td>
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<tr>
<td>7</td>
<td>Enzymes and Kinetics</td>
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<tr>
<td>10</td>
<td>Enzymes and Kinetics</td>
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<tr>
<td>12</td>
<td>Catalytic Strategies</td>
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</tbody>
</table>
14 Catalytic Strategies
17 Regulation
19 Catch up
21 **Examination #2**
24 Signal Transduction
26 Signal Transduction
28 Metabolism Introduction
31 Glycolysis

2 Nov. Glycolysis
4 Krebs Cycle
7 Krebs Cycle and Oxidative Phosphorylation
9 Oxidative Phosphorylation
10 **No Class Veteran’s Day**
14 Glycogen Metabolism
16 **Examination #3 (not including glycogen metabolism)**
18 Fat Transport
21 Fat Transport and Fat Metabolism
23 **No Class Thanksgiving**
25 **No Class Thanksgiving**
28 Fat Metabolism and Ketogenesis
30 Amino Acid Metabolism
2 Dec. Amino Acid Metabolism/Gluconeogenesis
5 Gluconeogenesis/Integration of Metabolism
7 Integration of Metabolism
9 **Examination #4**

**Final Examination**       **Monday December 12th  10:00-11:50**